

Operational Risk Assessments

Midland Loan Services, a division of PNC Bank, N.A.

DBRS Morningstar
November 2023

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Operational Classifications: Commercial Mortgage Primary Servicer, Master Servicer, and Special Servicer

Rankings:
Primary Servicer — MOR CS1 (Raised)
Master Servicer — MOR CS2 (Confirmed)
Special Servicer — MOR CS1 (Confirmed)

Trends:
Primary Servicer — Stable (from Positive)
Master Servicer — Positive (from Stable)
Special Servicer — Stable

Rationale

DBRS, Inc. (DBRS Morningstar) raised the commercial mortgage primary servicer ranking to MOR CS1 from MOR CS2 and confirmed the MOR CS2 commercial mortgage master servicer ranking and MOR CS1 commercial mortgage special servicer ranking for Midland Loan Services (Midland or the Company), a division of PNC Bank, N.A. DBRS Morningstar also changed the master servicer ranking trend to Positive from Stable and the primary servicer ranking trend to Stable from Positive.

DBRS Morningstar raised Midland’s primary servicer ranking and confirmed its master servicer ranking based on the following composite factors:

- Organizational Depth and Structure:** The Company has highly experienced managers and solid professional depth that has strengthened over the past two years. The revamped organizational structure that Midland implemented over 2021 and early 2022, and which entailed functional realignments and reporting line changes, along with some internal promotions and redeployments of well-tenured managers, has worked well to promote operational synergies, facilitate managerial oversight, and support career development. To support certain tasks, Midland continues to effectively leverage several vendors including a core vendor with offshore staff.
- Operational Stability and Workload Levels:** Midland demonstrates operational stability based on its decreasing employee turnover rates over the past 18 months to a level within historical industry norms as of midyear 2023. Midland’s workload ratios also have been decreasing, mainly through net gains in staffing combined with staff redeployments in connection with the pending expiration of some shared servicing assignments.
- Training:** Midland demonstrates a strong and enhanced training function with an extensive formalized curriculum and dedicated staffing resources administered through a robust PNC Bank training portal.
- Technology:** Midland has made significant advancements in its technology, which DBRS Morningstar now views as being quite strong and well designed to address the complexities of commercial mortgage-backed securities (CMBS) transactions. The core application is the Midland-owned

Enterprise!SM Loan Management System (Enterprise!), which the Company licenses to other servicers through hosting arrangements that may include certain tasks outsourced to Midland. It continues to progress in moving the system to a modernized cloud-native computing platform. Midland's suite of other integrated applications includes investor web portals, a re-engineered, highly effective borrower portal, a retooled investor reporting module, and a recently added module to help with subservicers' remittance accuracy. Midland has continued to rollout a number of new and enhanced servicing system modules that leverage robotic processes and an expanding number of automated programming interfaces (APIs). Through PNC Bank-managed data centers, Midland has sound data backup and protection practices.

- **Internal Audit and Compliance:** The comprehensive audit and compliance functions include Regulation AB attestations, PNC Bank's internal audits, Department of Housing and Urban Development (HUD) audits, and Type II Service Organization Controls (SOC 1 and SOC 2) reports. A risk, compliance, and quality-assurance (RCQ) team monitors operational risk, including regulatory compliance, and conducts its own reviews. The Company has a strong vendor management program as well. Midland demonstrates improved audit results over the past two years, including three years of exception-free Regulation AB reviews and clean opinions in the latest SOC reports.
- **Asset Administration:** Through specialized teams, Midland demonstrates effective administrative and portfolio management practices for CMBS transactions, Freddie Mac-sponsored securitizations, single-family rental (SFR) securitizations, and various other clients. It continues to enhance procedures across the operation and integrate them into the new or upgraded servicing system modules.
- **Subservicer Oversight:** As a master servicer, Midland has a strong subservicer audit program managed by the RCQ team. The Company also expects that the newly activated master servicer Enterprise! module will help ensure timely and accurate subservicer remittance processing.
- **Investor Reporting/Remitting:** As a master servicer, Midland is proficient with CMBS reporting requirements and has sound practices for cautious advancing and determining recoverability. The Company has continued to incur some reporting and remittance errors, including some that have triggered restatements and/or penalties. However, the number of occurrences is lower when factoring that a single error can affect several related loan positions. Midland also makes prompt corrections and implements retraining in response.

DBRS Morningstar confirmed Midland's special servicer ranking based on the following factors:

- **Staffing Depth:** Midland has well-experienced leadership for special servicing. Asset managers' average experience also has remained solid and toward the higher end of the range among special servicers. On a percentage basis, staff turnover remained elevated through H1 2023 but workload levels were reasonable.
- **Achievement Record:** Midland has continued to perform as an adept third-party CMBS special servicer that has consistently obtained solid asset recovery results.
- **Asset Resolution Practices:** Midland has sound procedures governing asset-management workflow, analytics, and resolution approvals, including real estate owned (REO) property management and sales. The Company's clean audit results over the past year also corroborate the sound control environment for special servicing work.

- **Technology:** The Company's integrated asset management application has robust capabilities for special servicing and related reporting, including a surveillance module to monitor loans as a named special servicer.

Primary/Master Servicing Volume

As of June 30, 2023, Midland's total servicing portfolio, including shared-servicing arrangements, consisted of 21,691 loans with an aggregate unpaid principal balance (UPB) of \$569.36 billion. It was a CMBS primary and/or master servicer on 573 transactions containing 8,432 loans with an aggregate UPB of \$175.56 billion. The Company's master and primary servicing included 1,160 SFR loans (233,931 properties) with an aggregate UPB of \$49.97 billion, which included 86 securitizations with a UPB of \$47.35 billion and 1,113 loans. Midland also serviced nine collateralized loan obligation (CLO) transactions and one collateralized debt obligation (CDO) collectively containing 181 loans with an aggregate \$5.91 billion UPB.

Special Servicing Volume

As of June 30, 2023, Midland was a named special servicer for 4,532 loans with a UPB of approximately \$184.54 billion involving 435 transactions, down from 6,649 loans with an aggregate \$222.88 billion UPB involving 532 transactions as of YE 2022. The decrease was mainly because a CMBS controlling classholder elected to transfer special servicing rights for all its investment positions to its affiliate. Beside still serving on other CMBS, Freddie Mac, SFR, CLO/CDO transactions, the Company is a named special servicer for many asset-backed securitizations and whole business transactions. It is not affiliated with any controlling class bondholders. Midland also serves as the special servicer for some balance sheet lenders.

As of June 30, 2023, Midland had 183 specially serviced assets (173 in securitizations) consisting of 178 loans (eight non-real estate) and five REO assets with a combined UPB of \$6.92 billion. SFR loans accounted for approximately 8% of the active loan portfolio by count.

Trend

The trend for the primary servicer ranking is changed to Stable from Positive. The trend for the master servicer ranking is changed to Positive from Stable and the trend for the special servicer ranking remains Stable.

DBRS Morningstar expects Midland to serve as a very adept primary servicer based on its re-engineered operating structure, strong and continually improving technology, lower workload ratios, easing employee turnover, solid training function, and clean audit results.

DBRS Morningstar acknowledges Midland's efforts and will continue to monitor the Company's progress as a master servicer to demonstrate fewer issues with investor reporting and remitting accuracy. The recently activated subservicer remittance tracking tool should help as well.

As a special servicer, Midland should remain highly effective for CMBS and other third-party assignments based on its staffing depth, asset recovery record, procedural controls, and technology capabilities.

Company Profile and Business Overview

PNC Bank is a wholly owned subsidiary of The PNC Financial Services Group, Inc. (PNC) and Midland is a core component of PNC Bank's real estate finance business. As of December 31, 2022, the Mortgage Bankers Association ranked PNC Real Estate/Midland as the largest commercial mortgage master/primary servicer by dollar volume and second-largest servicer by loan count, including a PNC Bank portfolio and some commercial finance and asset-backed transactions. As a Freddie Mac servicer, Midland was the third largest by dollar volume and the fourth largest by loan count. Midland also maintains a substantial presence as a third-party named special servicer for CMBS as well as commercial asset-backed transactions.

The Company's commercial loan servicing and asset management business includes institutional and specialty-finance clients, shared-servicing assignments, and SFR transactions (Midland is the largest-volume servicer for SFR securitizations and principally for single-borrower transactions), in addition to CMBS (principally through purchased mortgage servicing rights) and government-sponsored entity (GSE) transactions. In the years preceding 2020, it had been a large-volume contract servicer for government agencies as well. While Midland principally services real estate-oriented portfolios, it services other transaction types secured by telecommunications tower leases, outdoor advertising, equipment leases, franchise fees, retail brand licenses, and media and intellectual property rights.

Midland, and through PNC Bank, has three principal lines of business: loan servicing; real estate solutions, which encompasses special servicing, due diligence, and other asset management assignments; and technology as a provider of Shared Servicing® and Enterprise!, which Midland licenses to third-party clients on a hosted basis.

As of June 30, 2023, Midland employed 464 people for primary/master servicing and 32 for special servicing (within its real estate solutions group), compared with 447 and 43 people, respectively, as of June 30, 2022. Most personnel are in Overland Park, Kansas, although the Company has servicing employees at its Birmingham, Alabama and Dallas offices. The technology team for Enterprise! is dispersed across multiple PNC locations, with personnel concentrated in Little Rock, Arkansas; Overland Park, Kansas; and Pittsburgh.

Financial Position: DBRS Morningstar maintains a Long-Term Issuer Rating of A (high) on PNC, the publicly owned parent bank holding company. As noted in DBRS Morningstar's November 2022 rating report, PNC is the sixth-largest U.S. bank, with an extensive regional branch footprint covering the Mid-Atlantic, Southeast, Southwest, and Midwest. The credit rating reflects PNC's overall strong capitalization, liquidity, risk profile, and earnings power. PNC demonstrates a strong commitment to third-party commercial mortgage servicing based on its allocation of personnel, technology, and other resources for Midland.

Exhibit 1 Midland Historical Servicing and Active Special Servicing Volume

	June 30, 2023		December 31, 2022		December 31, 2021		December 31, 2020	
	UPB (\$ Millions)	Loans						
Primary Servicing*	441,127.6	16,402	507,247.1	19,854	470,507.3	19,983	464,401.6	24,470
Master Servicing**	128,231.9	5,289	127,436.9	5,277	119,042.9	4,987	95,874.7	4,142
Total Servicing Portfolio	569,359.5	21,691	634,684.0	25,131	589,550.2	24,970	560,276.3	28,612
Loans in Special Servicing	12,700.3	465	10,550.2	418	10,220.9	537	13,500.6	734
Special Servicing Portfolio	6,923.4	183	5,582.2	179	6,674.9	290	9,454.2	405
Active Loans Only	6,806.7	178	5,447.9	173	6,510.8	282	9,217.6	395
REO Properties Only	114.7	5	134.3	6	164.1	8	236.6	10

*Shared-servicing volume included in primary servicing. **Includes only loans subserviced by others.

Operational Infrastructure**Organizational Structure**

Starting in late 2021 and completed in the first half of 2022, Midland retooled its operating structure in which it realigned some functions to better match similar, and especially credit-oriented, processes within the same teams to facilitate managerial oversight (fewer direct reports per team leader), facilitate collaboration, and promote career pathing and staff retention. The corresponding managerial changes mostly involved tenured Midland managers elevated to higher-level positions along with some redeployments across functional areas. Midland also created a learning and development support specialist position reporting to the chief operations officer (COO) and filled by a former PNC Bank training division employee serving in a similar role.

Servicing Operations

The reconstituted servicing operations department consists of four main teams (recently consolidated from five) each with several sub-teams. Servicing operations covers investor reporting, accounting, and treasury; general borrower administrative services, borrower relationship management through investor/product-specific sub-teams; insurance, tax, and document management; and loan boarding/conversions, including rate adjustment monitoring, and payoffs.

Midland aligns its borrower relationship teams by investor/product types with specialized teams for CMBS transactions, large or especially complex loans, shared servicing assignments, GSEs, insurance companies, and SFR transactions. In 2022, besides offering a customer service telephone number, Midland enhanced its handling of CMBS loan relationships by having a dedicated analyst assigned to every borrower. As part of its department reorganizing, Midland moved its subservicer oversight staff under the CMBS team and moved the special servicer liaison team to real estate solutions.

Real Estate Solutions

This department covers all special servicing and credit management services. Real estate solutions includes performing-loan asset management groups, which have staff for borrower consent requests. It also has a servicing liaison group to coordinate special servicing loan transfers from external primary/master servicers. The department includes units for collateral surveillance, covenant management, and managing reserves.

Vendor Support

Although all Midland employees are U.S.-based, the Company has expanded its use of vendors over the past few years to support various administrative/data entry work. For all vendors, Midland retains responsibility for quality control (work samples are rechecked for data accuracy) and approval authority over credit-related decisions and process execution.

A global services vendor with dedicated offshore staff supports property financial statement and rent roll data entry/spreading. Midland noted that because the vendor continues to demonstrate proficiency and perform well, it expanded the vendor's work scope to include SFR partial releases/paydown calculations and may look to add other tasks. It continues to use another vendor mainly to assist with insurance administration, lien releases, and review/data entry of subservicers' inspection reports. Midland's other vendors for inspection services include one specifically for SFR properties.

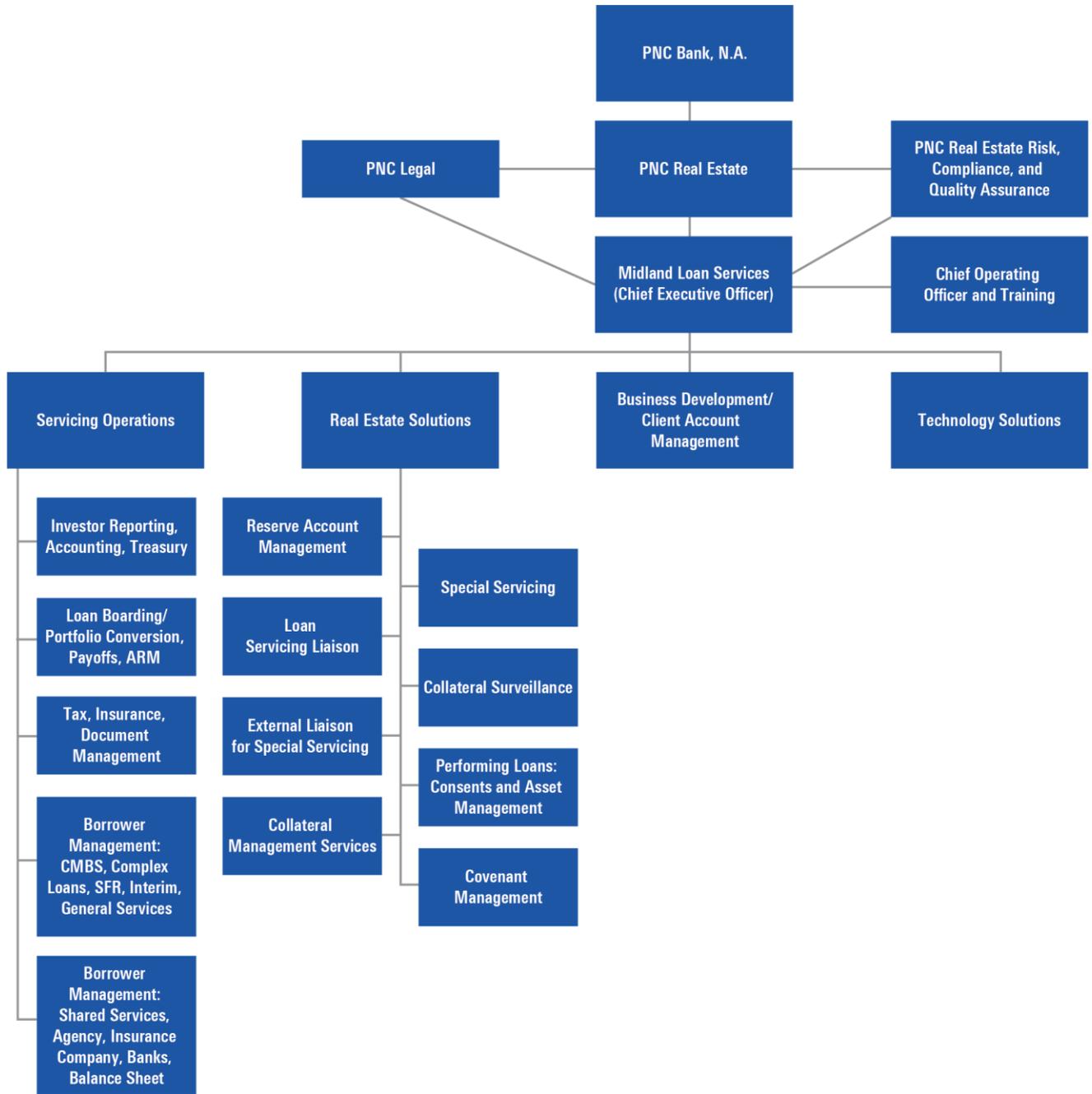
Midland has another vendor that assists with a variety of functions including covenant administration, borrower consent requests, assumptions and leasing requests, inspections, and waterfall loan setup.

Other Departments

Midland did not alter the structure of its technology services department and a client solutions department, which handles business development/client relationship management, including Midland as a shared-servicing and technology provider.

The RCQ group, which reports directly to the PNC Real Estate COO, coordinates Midland's auditing activities, conducts its own control testing of Midland, and audits Midland's subservicers. Midland also has a legal department, which reports to PNC Real Estate's managing chief counsel.

Exhibit 2 Midland Loan Services Organizational Structure



Source: Midland Loan Services.

Management and Staff Experience

The average experience and company tenure for primary/master servicing managers remains high. The average experience for the senior-most managers also has substantially increased since YE2020. The average experience for staff-level personnel is solid and highest among those in portfolio management positions.

Fluctuating between 14 years and 16 years over the past few years, asset managers' average experience has remained solid and toward the higher end of the range among special servicers.

Exhibit 3 Midland Management and Staff: Average Years of Experience

	June 30, 2023		December 31, 2022		December 31, 2021		December 31, 2020	
	Industry*	Company Tenure	Industry*	Company Tenure	Industry*	Company Tenure	Industry*	Company Tenure
Primary/Master Servicing								
Senior Management	27 (4)	20	27 (4)	21	26 (5)	21	19 (4)	19
Middle Management	20 (79)	17	21 (73)	18	21 (70)	17	21 (76)	17
Staff	9 (381)	6	8 (390)	6	8 (342)	6	7 (356)	6
Portfolio Management Only	16 (36)	9	16 (31)	9	16 (35)	10	17 (34)	11
Special Servicing								
Senior Management	21 (3)	21	21 (3)	21	20 (3)	19	34 (3)	26
Middle Management	20 (8)	14	15 (7)	12	20 (8)	13	23 (11)	19
Asset Managers	16 (16)	9	14 (16)	9	14 (22)	7	16 (24)	9

*Figures in parentheses are the number of people.

Employee Turnover and Hiring

Midland has not been immune from the employee hiring and retention challenges affecting the entire servicing industry over the past couple of years. Additionally, the Company's location in Overland Park, Kansas, is an especially competitive hiring environment for mortgage servicing employers.

However, the Company's employee-turnover rates for primary/master servicing have been receding since 2021 and were within historical industry norms at midyear 2023. Excluding internal transfers, the rates for 2022 and H1 2023 were even better. The management-level turnover rate has been generally low over the years although it did spike in 2021 as part of overall turnover.

Countering employee turnover over the 18 month period ending June 2023, Midland hired 138 people into primary/master servicing, which resulted in an 11% net gain in staffing.

Within special servicing, Midland has had elevated employee-turnover rates over the past couple years. Some of this has involved people transferring to other roles as portfolio volume has ebbed and flowed. Some of the departures this year also may relate to Midland's recent transfer of a sizable portion of its named special servicing portfolio to an external special servicer.

Exhibit 4 Midland Primary and Master Servicing: Management and Staff Turnover Rates and Hiring*

	H1 2023	2022	2021	2020
Total Employees — Beginning of Period	467	417	436	438
Total Turnover Rate (%)	6.0 (12% annualized)	15.3	19.5	10.3
	28 Positions	64 Positions [†]	85 Positions	45 Positions
Involuntary (%)	0.4	0.7	0.9	1.14
Voluntary (%)	5.6	14.6	18.6	9.13
Management Only (%)	0.6	1.7	4.8	1.14
Staff Only (%)	5.4	13.6	14.7	9.13
Total Turnover Excluding Internal Transfers (%)	4.7 (9.4% annualized)	12.5	14.7	8.7
New Hires/Transfers In (# of Positions)	25 (3 Manager)	113 (7 Managers)	71 (6 Managers)	44 (2 Managers)
Adjustments (#)**	0		(5)	(1)
Total Employees — End of Period	464	467	417	436

[†]H1 2022: 41 departures (seven were internal transfers). H2 2022: 23 departures (five were internal transfers).

Exhibit 5 Midland Special Servicing: Management and Staff Turnover Rates and Hiring*

	H1 2022	2022	2021	2020
Total Employees — Beginning of Period	36	43	44	31
Total Turnover Rate (%)	22.2 (44.4 annualized)	37.2	38.6	9.7
	8 Positions	16 Positions	17 Positions	3 Positions
Involuntary (%)	0	2.3	0	3.2
Voluntary (%)	22.2	34.9	38.6	6.5
Management Only (%)	5.5 (1 was internal)	4.6 (Both internal)	13.6	0.0
Staff Only (%)	16.7	32.6	25.0	9.7
Total Turnover Excluding Internal Transfers (%)	13.9	25.6	27.3	9.7
New Hires/Transfers In (# of Positions)	4 (1 Manager)	10 (1 Manager)	15 (4 Managers)	17 (2 Managers)
Adjustments (#)**	0	(1)	1	(1)
Total Employees — End of Period	32	36	43	44

*Turnover rates equal departures divided by the number of people at the beginning of the period. **Adjustments may reflect departures/returns of part-time staff or staff on leave of absence.

Workload Ratios*Primary/Master Servicing*

Midland's loans-per-employee (LPE) ratio has been steadily decreasing over the past few years. It was 47:1 as of June 30, 2023, down from 54:1 as of December 31, 2022, 57:1 60:1 as of December 31, 2021, and 66:1 as of December 31, 2020. At its peak, the ratio was around 90:1 in 2018–19. By comparison, the composite LPE ratio for the four largest-volume CMBS master servicers, including Midland, was 38:1 as of YE 2022, down from 42:1 as of YE2020.

Midland's decreasing LPE ratio may reflect that the portfolio contains fewer small-balance loans and loans secured by non-traditional/non-real estate assets than in past years. Other contributing factors are Midland's net increase in its total employees as well as a reduction in its shared servicing volume,

including a large portfolio transfer to another servicer in 2020 in which Midland retained and redeployed much of the associated staff.

While Midland's LPE ratio is still somewhat higher than the master servicer industry composite, it may reflect the remaining shared-servicing arrangements in which Midland provides only selected services. The Company's non-real estate portfolios and wider use of vendors in recent years to support some tasks also can allow for a higher ratio.

Special Servicing

As most of the active portfolio consists of loans rather than REO properties, Midland does not usually separate loan and REO management functions among the asset managers.

As of June 30, 2023, Midland had 16 asset managers for an assets-to-asset manager ratio of about 11:1, which was about 7:1 when including nine analysts who also assist with consent reviews on performing loans. By comparison, as of June 30, 2022, Midland had 18 asset managers for an assets-to-asset manager ratio of approximately 10:1 and 7:1 including eight analysts. Based on related loans tied to the same collateral and/or sponsor, the ratios may be somewhat lower.

The active special servicing portfolio includes some SFR loans, non-real estate assets, and small-balance loans. These asset types, along with Midland having relatively few REO properties, typically can permit more assets per asset manager. In addition, other managers, loan administrators, and analysts (nine analysts as of June 30, 2023) support special servicing work and consent reviews on performing loans. As needed, the group also redeploys associates from other business lines to assist with special servicing work.

Assessment: Midland's retooled organizational structure and reporting lines, in which it realigned certain functions and promoted/redeployed several managers, has proved to be very successful in supporting better operating efficiencies and synergies. Additionally, Midland shows strengthened operational stability based on managers' experience and tenure remaining high and employee turnover decreasing to within industry norms. DBRS Morningstar also recognizes Midland's lower and more reasonable workload ratios for primary/master servicing. As a special servicer, Midland demonstrates reasonable workload levels in line with many of its peers.

Training

Midland provides formalized training for all servicing personnel. A full-time support specialist, who transferred from PNC's corporate training division and reports to Midland's COO, oversees all internal learning and development activities.

In January 2023, Midland decommissioned its own training portal and merged its core and revamped curriculum into PNC's learning and development platform, known as iLearn. Through iLearn, employees can register for online classes, gain access to training materials, complete courses offered through internal and several external sources, and track completed training. The portal contains a growing

number of featured providers of learning material and a multitude of required and elective courses. Live sessions are usually recorded as well. Managers also use iLearn to view the training progress of their team members.

Midland's training function encompasses sessions with invited external speakers and interdepartmental forum meetings, which review servicing/special servicing topics, procedural issues, client requirements, and suggestions for process improvement. Servicing employees also participate in courses and many have achieved industry certifications available through the Mortgage Bankers Association. Special servicing training includes postmortem workout reviews and seminars from vendors, law firms, and other service providers.

In 2022, Midland changed from an hours-based to a completion-based approach with assigned points to track required employee training and participation. The new method emphasizes content, relevance, and required elements. Under this method, Midland targets about 70 completions per year per employee on average and noted that employees averaged about 57 completions in H1 2023. Training plans and expected completion goals are customized based on experience levels and job roles. The Company noted that the new tracking method does equate to between 30 and 40 training hours depending on the employee. Midland noted that employee survey results regarding training have been more positive under the new approach as well.

Assessment: Midland has a strong and effective training function based on its broad and expanding curriculum and further leveraging of PNC's resources, including its robust online learning and tracking portal.

Audit, Compliance, and Procedural Completeness

Midland maintains policies and procedures governing all essential servicing and special servicing functions. Policy and procedural updates are regularly updated, centrally managed, and accessible to servicing personnel in read-only formats on a shared network drive.

Midland's independent RCQ team manages Midland's policies and procedures, oversees issue resolution and validation of remediation activities, liaises with PNC Bank and external auditors, oversees year-end contract compliance work for securitized transactions, audits subservicers, leads technology-risk and business-continuity efforts, conducts control testing, and oversees the reporting of key risk-indicator metrics. RCQ works with the Midland management team to maintenance the control environment and conduct any applicable remediation resulting from business initiatives, regulatory changes, or other events. RCQ, which uses the same purchased software system as PNC Bank to track audit results and open items, monitors more than 400 control items each year for Midland.

In conjunction with servicing management, RCQ oversees operational risk for the first line of defense, which centers on a risk controls and self-assessment program that monitors various performance metrics across functions. PNC Bank's independent risk management (IRM) team serves as a second line of defense. IRM monitors business line risks, scrutinizes the implementation of risk-management practices,

and reports issues or exceptions. IRM's responsibilities include designing the company's enterprise-level written risk and governance framework and policies. IRM also may intervene by challenging the design and execution of first line of defense risk processes and controls. Midland's third line of defense is PNC Bank's independent internal audit department, which reports to a PNC Bank audit committee. The audit program follows a three-year cycle to examine a range of processes. However, the auditors generally issue multiple reports each year and routinely examine cash controls, investor reporting, and technology security, along with selected servicing/asset management functions. Accordingly, audit work is ongoing every year.

Additionally, Midland annually undergoes Regulation AB audits, Type II SOC 1 and SOC 2 reviews as well as GSE-conducted and HUD-commissioned audits. Midland also adheres to HUD's required quarterly quality control program.

Recent Audit Results

To avoid previous and potentially any new audit exceptions, Midland continues to fine-tune some of its procedures and provide additional employee training. The Company's various technology enhancements, noted later in this report, further serve to support and strengthen operating controls.

- The 2020, 2021, and 2022 Regulation AB audits were free of exceptions.
- The SOC 1 issued in November 2022 and the SOC 2 issued in December 2022 both rendered clean opinions.
- The two most recent PNC Bank audits of Midland, issued in December 2022 and June 2023, had Satisfactory (highest attainable) ratings.
- The latest HUD-commissioned audits, issued in March 2023, had unqualified opinions denoting full compliance.

Vendor Management

Business line managers are required to engage and oversee vendors according to PNC's third-party management program, which has comprehensive policies and procedures governing selection, contract negotiations and templates, compliance monitoring, and termination. A PNC-managed intranet portal tracks all vendor engagements and performance metrics/issues. To be approved and comply with Midland/PNC's ongoing compliance requirements, vendors must satisfactorily provide procedures and complete questionnaires covering areas such as technology/data security, regulatory compliance, and offshore operations. Vendors must also provide their third-party audits as applicable. Additionally, vendor monitoring controls and compliance are tested as part of Midland's annual SOC 1 audit.

Assessment: Midland's policies and procedures are suitably detailed, soundly address its myriad servicing duties, and are effectively managed to control revisions. The Company also demonstrates stringent vendor oversight and related quality control practices. Based on the frequency and scope of its various audits, including its own independent compliance program, Midland has a thorough and closely monitored audit regimen. DBRS Morningstar recognizes Midland's improved audit results as well.

Legal Liability and Corporate Insurance

Midland reported that it was not involved in any pending litigation that would materially and adversely affect its servicing operations. The Company reported that it did not receive any notices of servicing-agreement default. It has directors and officers, errors and omissions, and mortgage impairment insurance coverage. Midland has network security and privacy liability (cybersecurity) coverage as well.

Assessment: The Company's corporate-level coverage amounts meet the insurance minimum set forth by GSE seller/servicer guidelines. Based on the Company's representations, it is not involved in any material lawsuits related to, or which could negatively affect, operations.

Technology, Disaster Recovery, and Data Security*Staffing and Applications*

Midland's technology team handles user support, application development, data backup, and data-recovery testing. The team is part of PNC Bank's technology department, which has about 160 people dedicated to Midland applications, including Enterprise!. The Midland/PNC technology teams continue to collaborate on various platform, servicing system, and other application enhancement projects.

Midland uses the most current version of Enterprise! as its core system for servicing administration and portfolio management. As the owner of the application, Midland also licenses it to third-party clients or supports it through an application service provider-hosted environment. Over the past couple years, Midland has added enhancements for transaction processing and approvals; regulatory updates; data security; portfolio analytics, with more user-driven data-validation and tickler alerts; and updates to facilitate compliance with the CREFC IRP, Schedule AL filing requirements, and GSE reporting. For its own servicing, Midland connects the system with its general ledger and a data warehouse used for queries and reporting.

For special servicing, Midland uses the servicing system in conjunction with a proprietary asset-management application, AM Insight™ (AM Insight), which Midland continues to enhance. The application is integrated with Enterprise! and other applications and built on a web-accessible operating structure. AM Insight addresses CMBS reporting requirements, and its features include automated asset status report/business case creation, integrated net present value modeling, and workflow and approval management.

The technology suite includes integrated proprietary and vendor-supported applications for bank reconciliations, cash-managed loans, investor remitting/reporting, internal document management, notices and correspondence, document exchanges with investor clients, automated treasury/cash movement, and automated clearing house (ACH) requests with embedded approval controls. Robotic processing automation (RPA) and machine learning programs are used in several areas of servicing as well.

As extensions of the servicing system, Midland offers borrowers and investors (one for CMBS and one for portfolio lenders) respective web portals. During 2022, Midland rolled out a retooled borrower portal with expanded navigation and self-service features as well as improved integration with the servicing system's workflow management tools, which Midland also has enhanced. The Company continues to expand the borrower portal's capabilities and especially for document exchanges and processing borrower requests.

Technology Enhancements: Completed and in Process

PNC Bank has been making significant capital investments in Midland's technology capabilities. Using agile software development methods, Midland continues to complete various phases of its initiatives to expand the servicing system's functionality as well as move it to a public cloud-based environment. In addition to the retooled borrower portal, some of Midland's other notable technology advancements during the past three years include the following:

- A new Enterprise! insurance module.
- A retooled covenant compliance module, with expanded quality control and approval tracking mechanisms. The application is in partial use and a full rollout is expected by YE2023.
- A retooled automated investor reporting module, which calculates and validates remittance and fee amounts, tracks money movements, and has an interface with the servicing system to address CMBS and a range of other transaction types.
- A new surveillance module, which also monitors all loans for which Midland is the named special servicer.
- Automation of alert triggers for appraisal subordination entitlement reductions (ASERs) to help reduce errors, especially for pari passu loans.
- Enhanced workflow management functions across the servicing system.
- Expanded automation for document management, including integrated quality control techniques, that leverages RPAs for rent roll spreading, property operating statement spreading and analyses, and some other tasks.
- A recently deployed new master servicing module to coordinate subservicers' remittances and expedite processing.

Development of more APIs for Midland's own clients and third-party users of Enterprise!

Data Backup, Security, and Disaster Recovery

PNC Bank manages Midland's data backup and security through the bank's three data centers, which are vendor owned and hosted. These are relatively newer facilities and have undergone various upgrades in the past few years. The data centers are appropriately distanced and operate on separate power grids. PNC Bank manages system access, physical security, and other technology risks for Midland and other PNC Bank business areas through a centralized cybersecurity program. Midland has continued to enhance its real-time data protection practices through software upgrades and stringent procedures.

Midland replicates data in almost real time from the primary data center to the backup centers. Midland stated that its recovery time objectives require restoration of cash management functions within six hours and all servicing functions within 24 hours. As corroborated by its failover testing results, Midland noted that any exposure to data loss should be limited to only a few minutes based on its data-mirroring and backup procedures. Midland conducts disaster recovery testing on an annual basis. The latest test was successfully conducted in March 2023. The Company issued an updated business continuity plan in May 2022.

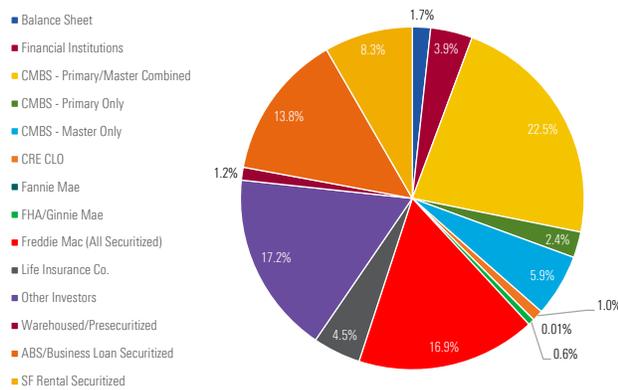
Midland’s technology platform is currently hosted inside PNC Bank’s private data centers. PNC Bank, in collaboration with Midland, is readying the Enterprise! technology platform for a future transition to a public vendor-controlled cloud-computing environment.

Assessment: Midland’s technology provides a high and expanding degree of process automation, centralized data management, and functionality to address its servicing and special servicing duties for CMBS and other investors. As a result of the Company’s substantial investment and achievements in the past few years, DBRS Morningstar recognizes that Midland has very strong technology capabilities. The Company’s security and backup practices indicate as well that it has sound capabilities for data recovery and monitoring threats.

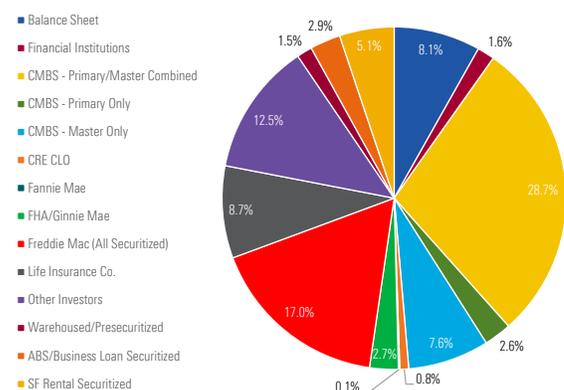
Primary and Master Servicing Administration

As one of the largest commercial mortgage servicers, Midland manages a diverse portfolio based on property types, geography (all 50 states, Washington, D.C., and U.S. territories), transaction structures, and investor clients.

Exhibit 6 Servicing Portfolio by Investor Type (UPB)*

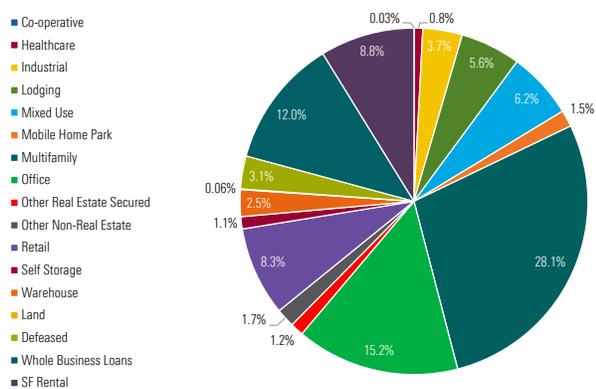


Servicing Portfolio by Investor Type (# Loans)*

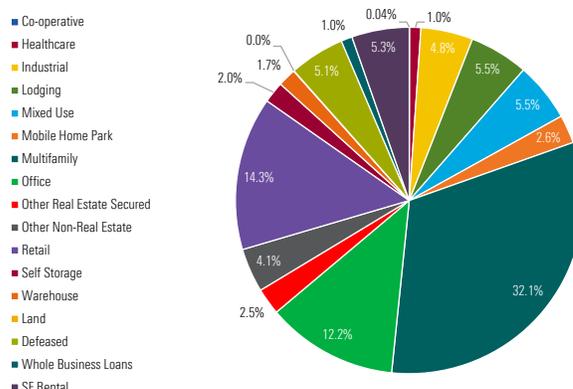


*Total primary and master servicing as of June 30, 2023. Figures may not sum to 100% because they are rounded.

Exhibit 7 Servicing Portfolio by Property Type (UPB)*



Servicing Portfolio by Property Type (# Loans)*



*Total primary and master servicing as of June 30, 2023. Figures may not sum to 100% because they are rounded. The portfolio contained 47,585 properties, 233,931 SFR properties, plus Treasury securities for 1,117 defeased loans.

Loan Boarding

In H1 2023, Midland, as a primary or primary/master servicer across all investor types, boarded 640 loans with a total \$18.77 billion UPB. In 2022, Midland, as a primary or primary/master servicer across all investor types, boarded 3,702 loans with a total \$66.32 billion UPB. By comparison, during 2021, Midland boarded 3,919 loans with a total \$149.59 billion UPB.

Midland averages about four days to board loans across all investor types. It aims to board new loans with data required to conduct payment processing and investor reporting by no later than the first reporting determination date. During the boarding phase, it creates and then centrally maintains summaries of deal-specific critical servicing and related pooling and servicing agreement requirements. PNC Bank’s loan origination application has an interface with Midland’s servicing system. Midland, as a primary and master servicer, also boards a high volume of modified or corrected loans. The Company noted that the updated loan terms were typically loaded onto the loan servicing system within five business days.

Loan boarding procedures require staff to compare system inputs with source data and include a secondary level of review. The servicing system provides exception reporting for timeliness and accuracy and issues borrower welcome letters with compliance requirements within the next business day after boarding a loan. Enterprise! modules track borrower compliance items, covenant triggers, and missing documents. Midland places an introductory call to new borrowers to cover the new portal’s functionality, introduce their dedicated loan analyst, review payment, tax, insurance, and reserve details, and coordinate discussions with the covenant and cash management teams as needed.

The Company services some loans with rate cap agreements and loans with letters of credit as supporting collateral, which are stored on-site in a vault or with a custodian depending on the agreement. Midland centrally tracks the expiration dates as well as the required minimum credit ratings of the counterparties.

Midland tracks Uniform Commercial Code (UCC) filing expiration dates via the servicing system and uses a third-party vendor (mainly through its self-service website) to assist with filing UCC continuation statements. For 2022 and H1 2023, the Company reported that it renewed all UCC filings without any loss of lien position, including four filings that had lapsed. As a master servicer, Midland monitors UCC filing compliance through quarterly reports submitted by its subservicers.

Assessment: Loan boarding practices are proactive and well controlled. Midland's targeted time frame of boarding new loans is in line with industry norms. Its time frame for issuing welcome letters is faster than some other servicers. DBRS Morningstar recognizes Midland's capabilities to accurately board a high volume of loans and its proactive approach for contacting new borrowers and reviewing loan document requirements with them. Midland has sound practices for monitoring rate cap agreements, letters of credit, and UCC filings.

Payment Processing

Midland stated that approximately 99% of loan payments are set up to be received, deposited, and system-posted electronically (lockbox, wire, ACH) and that the servicing system updates all transaction processing in real time. Through integrated treasury-management and banking applications, Midland also has largely automated mechanisms to process cash-managed loans. Lockbox payments are first deposited to a central clearing account and then automatically swept to investor custodial accounts, unless flagged as suspense items. The lockbox has an interface with the servicing system.

Midland segregates payment posting, depositing, and system-balancing tasks among the staff. The servicing system reconciles payment receipts daily for review by management. Midland routinely validates rate indexes, and it maintains current balances and paid-to dates of subserviced loans on its servicing system.

As of June 30, 2023, Midland received approximately 32% of loan payments as ACH direct deposits, 4% of payments through lockbox processing, 64% as wire transfers. The Company may occasionally receive a payment through its borrower portal. It also may occasionally receive a payment at its street address, which may include payments routed from PNC Bank offices. Midland records them in a central log, uses photocopies for posting, and forwards the originals to the PNC Bank lockbox. Midland did not report any unreconciled items older than two days in its clearing account.

Midland does not provide paperless billing notices either through email alerts or the borrower portal. However, in addition to sending hard-copy billing statements, Midland does post the statements to the borrower portal. The payoffs team averages about five calendar days to provide loan payoff quotes.

Exhibit 8 Primary-Servicing Floating-Rate and Cash-Managed Loans

	June 30, 2023		December 31, 2022		December 31, 2021		December 31, 2020	
	UPB (\$ Millions)	Loans						
Floating-Rate Loans	99,618.0	1,948	118,696.5	2,455	99,875.4	2,411	93,717.7	4,004
Component of Primary Servicing (%)	22.6	11.9	23.4	12.4	21.2	12.1	20.2	16.4
Cash-Managed Loans*	133,096.9	2,690	131,812.3	2,641	122,517.1	2,637	103,676.2	2,256
Component of Primary Servicing (%)	30.2	16.4	26.0	13.3	26.0	13.2	22.3	9.2

*Loans with cash management (hard lockbox) agreements.

Assessment: Midland has highly effective payment processing based on its automated processes, controlled practices, and clear audit results. The company is well experienced in handling a high volume of loans with complex cash-management structures. For the few live checks it receives, Midland may consider electronically depositing them on-site through banking software to expedite processing and reduce the risk of lost checks. It also may consider issuing electronic billing alerts, through its borrower portal and/or separately, which some servicers have implemented.

Investor Reporting and Accounting

As of June 30, 2023, as a primary and/or master servicer, Midland processed nearly 1,900 investor remittances per month, including nearly 1,100 involving CMBS transactions.

Midland uses a retooled remittance/investor reporting application that it designed for straight-through transaction processing and automated production of the CREFC IRP. The Company also uses the application to remit funds and produce reports tailored to other investors' requirements. CMBS and other institutional investors have access to their reports and transactional performance data in downloadable formats.

The investor reporting analysts, with corresponding approvers, have assigned portfolios aligned by investor types. Between the determination and remittance/reporting dates, analysts validate transaction data to confirm remittance amounts, collection account funds availability, and other loan and property information. Midland's quality control process, which entails more than 40 control tests, validates investor reporting and remittance data before receiving approval and secondary manager signoffs. The Company also recently activated a new master servicing module to help forecast and ensure accurate remittances from subservicers.

Through its teams, the Company segregates investor-report/remittance preparation, investor-remittance execution, and account-reconciliation tasks, which respectively entail secondary and/or management-level approvals. The treasury unit executes remittances using a funds-transfer request application, which has approval controls and repetitive wire instructions.

Each quarter, the investor reporting department manager also attests to the effectiveness and proper execution of various controls such as the secondary review of new portfolio setup data, the accuracy and timeliness of wire-transfer requests, the timely clearing of bank reconciliation items, and trustees' confirmations of remittance calculations. Midland also has a business analytics team to monitor the appropriate remittance and reporting protocols for a new transaction, including the remittance calculations, before transferring the portfolio to the main investor reporting team.

Investor reporting and accounting employees have online access to custodial account activity, and custodial bank account reconciliation processes are largely automated. Midland reconciles bank account activity daily, with more formal reconciliations performed at month-end. The Company also tracks custodial banks' credit ratings for servicing-agreement compliance.

Midland has continued to incur some reporting and/or remittance errors and restatements and some cases involving penalties. The situations have been generally minor and none has resulted in any bondholder impairments. Midland stated that it actively tracks errors and continues to modify procedures and technology programming and conduct staff training to reduce the risk of recurrences. The Company noted that some errors have been traceable to subservicers and that one error can affect multiple loan positions, and especially if there is a companion *pari passu* component. It did not have any late reporting or remitting between July 2022 and June 2023.

Assessment: Midland has sound investor accounting and reporting functions based on its clean audit results, automation, segregation of tasks, and other control practices. Overall, the Company demonstrates timeliness and accuracy relative to its high monthly reporting and remitting volume. It also is well experienced with CMBS requirements. DBRS Morningstar will monitor Midland's progress in reducing its errors and/or penalties.

Real Estate Tax, Insurance, and Reserve Account Administration

Real Estate Tax Administration

As of June 30, 2023, approximately 39% of Midland's primary-serviced CMBS loans were escrowed for real estate taxes. Midland has had negligible nonreimbursable tax penalties during the past few years relative to its very high volume of account disbursements.

The servicing system tracks tax-payment due dates and the payment status for all loans, whether escrowed or not. A tax service tracks and remits payments to tax authorities for escrowed loans and reports unpaid taxes on nonescrowed loans. For nonescrowed loans, Midland sends a delinquent tax notice to the borrower and tracks the delinquent tax until paid. The servicing system also automatically generates tax notices.

Insurance Administration

The Company uses a retooled insurance administration module to track policy requirements, renewals, and claims and to manage escrow accounts. As of June 30, 2023, only about 12% of Midland's primary-serviced CMBS loans were escrowed for insurance payments. Midland has a dedicated insurance

administration team responsible for monitoring policy renewals, which receives assistance from a vendor to obtain flood zone determinations (including all SFR properties) and for the issuance of force-placed insurance policies. The servicing system tracks policy expirations, coverage requirements, and auto-generates reminder letters 30 days before policy expirations. Immediately upon policy expiration customers are notified of the need for coverage if proof of coverage was not obtained, and again at 30 and 45 days after policy expiration. Additionally, 10 days to 15 days before policy expiration, Midland engages in an email and telephone campaign to pursue evidence of renewed policies. The company reviews insurance carrier ratings for compliance at every renewal period.

As of June 30, 2023, Midland reported 0.5% of all primary-serviced loans on its forced-placed policy. Its forced-placed policies provide for 180 days of retroactive coverage for flood and 120 days of retroactive coverage for other perils. Midland's forced-placed insurers are certain underwriters at Lloyd's London and Great American Assurance Co.

As a master servicer, Midland reviews tax payment and insurance coverage exception reports from its subservicers quarterly and reviews their corresponding compliance certifications annually.

Reserve Accounts

A reserve administration team, in conjunction with the operations department, reviews expenditure requests to release funds escrowed in capital reserve accounts. The Company uses the servicing system to manage workflows, track reserve funds, record disbursements, and reanalyze accounts. Prior to disbursement, management must approve all reserve account disbursement requests. Midland's reserve account management may also involve interest reserve analysis and funding on construction and/or tenant build-out projects. For larger capital improvement or tenant buildout projects, Midland's procedures satisfactorily address lien waivers and periodic inspections of work progress.

Assessment: Midland's tax and insurance administration practices are sound and controlled. However, some servicers, to be extra proactive, issue their first borrower-reminder notices earlier than 30 days before policy expiration. Midland's forced-placed policy's retroactive coverage provisions are reasonable and longer than that of some other servicers. The Company notes that the servicing system's new insurance administration module has increased tracking and processing efficiency. Midland has effective oversight practices and strengthening technology tools to manage a high volume of reserve account disbursement requests, with experience involving a range of property types and complex loan structures.

Master Servicing: CMBS Advancing

As a CMBS master servicer, Midland advances principal, interest, and property protection expenses. It tracks each loan's cumulative advances versus its current valuation. When advances reach 50% of estimated value or liquidation proceeds, or when a pool contains only a few assets, Midland noted it will advance with extra caution or may stop advances altogether. Decisions to continue advancing require levels of approvals based on an authorization matrix. Senior managers also review advancing activity and valuation update efforts through a monthly report.

Exhibit 9 Midland: Master Servicer Advances

As of	June 30, 2023	December 31, 2022	December 31, 2021	December 31, 2020
Total Advances Outstanding (\$)*	452,969,168	397,403,138	444,766,072	422,333,286
Total Advances Outstanding (# Loans)	1,078	715	885	1,585
Average Advanced Per Loan (\$)	420,194	555,809	502,561	266,456
Total Advances to CMBS Servicing Volume (%) [‡]	0.28	0.24	0.28	0.29

*Principal, interest, and property-protection advances. [‡]CMBS servicing volume includes the UPB of primary/master combined and master only.

Assessment: Midland has well-delineated advancing and recoverability-determination procedures. Its stated policy of assessing the timing and cash flow impact to the trust before recapturing advances also is a customary best practice.

Master Servicing: Subservicer Auditing and Compliance

Midland has a dedicated subservicer liaison/oversight team in its CMBS surveillance unit. Additionally, the RCQ group oversees a subservicer audit program, which covered 31 subservicers (including three in Canada) as of June 2023. The investor accounting team also balances remittances and reviews compliance reports from subservicers.

Midland assesses a subservicer's monthly reporting and remitting performance, CMBS loan volume, loan types serviced, latest Regulation AB attestation, and other compliance certifications. Each subservicer is subject to a desktop review annually and a subset of subservicers receive an additional in-person visit. Throughout the Coronavirus Disease (COVID-19) pandemic, Midland performed only desktop-method reviews but resumed a schedule of in-person/on-site visits in 2022.

Midland has some subservicers that service only CMBS transactions, although most of its subservicers with cashiering duties are on Freddie Mac deals. While Midland reviews Freddie Mac's subservicer audit reports, it does not solely rely on them. The Company also convenes with Freddie Mac annually in the first quarter to review the GSE's subservicer examination schedule and share the past year's audit results.

Subservicers complete a questionnaire before their audits, and Midland formally communicates the audit results to each subservicer. Findings are tracked for resolution. The audit scope covers all core loan administration areas including cash processing, accounting, tax and insurance, and portfolio management. RCQ noted that it investigates subservicers' data protection practices in accordance with Freddie Mac's guidelines. Midland also reviews subservicers' quarterly certifications for real estate tax, insurance, and UCC activity.

Assessment: Midland has thorough subservicer oversight and auditing practices based on its staff resources, mandate to audit all subservicers annually, and extensive program scope. Midland's decision to conduct its own audits of Freddie Mac subservicers, while leveraging Freddie Mac's work, is an excellent practice.

Portfolio Management and Surveillance

Financial Statement Analysis and Property Inspections

As noted, an analyst is assigned to every borrower relationship. Additionally, all borrowers can contact Midland's borrower services team through a customer service telephone number, a dedicated email box, or the web portal, which now includes a chat function.

The collateral surveillance team manages financial statement collections, watchlist or credit-related issues, and corresponding borrower contact. Also, as noted, the surveillance team oversees a vendor with offshore staff, who have selective servicing system access, to assist with rent roll and financial statement data entry and preparing operating statement analysis reports (OSARs). Robotic processes combined with an enhanced workflow tool introduced in 2022 also facilitate these tasks. Midland conducts quality control reviews of the vendor's work as well.

Midland, as a CMBS primary servicer, has consistently obtained and been able to analyze/report 90% or more of required Q4 or annual property financial statements by May 31 for the past several years. As a CMBS master servicer dependent on subservicers' responsiveness, Midland's collection rates have consistently been high as well. As a master servicer, Midland samples source documents to confirm the reasonableness of subservicers' submitted OSARs.

Midland generally uses vendors for property inspections. The servicing system tracks inspection reports and the resolution of deferred maintenance issues. As a master servicer, Midland's practice is to review all subservicer-submitted inspection reports for potential watchlist and other issues. A few years ago, Midland expanded its inspection compliance requirements for subservicers as well. For the 12-month period ending June 30, 2023, as a primary servicer, the Company received 94% (and about 95% for CMBS loans) of all required inspections by or within 30 days of their due dates. Midland tends to order and receive about 80% of inspections in the second half of the year.

Exhibit 10 Midland: Full-Year Financial Statement Collection Rates

	By May 31, 2023*	By May 31, 2022*	By May 31, 2021*
CMBS Primary Servicing Portfolio			
Statements Received	96.6	96.0)	97.5
Analyzed and Reported	94.3	95.3	97.2
CMBS Master Servicing Portfolio (subserved by others)			
Statements Received	85.9 (96.1)	83.4 (94.2)	91.4 (95.0)
Analyzed and Reported	80.5 (91.4)	73.2 (87.5)	77.2 (93.2)

*Percentages in parentheses are as of June 30.

Watchlist, Covenant Compliance, and Early-Stage Collections

The collateral surveillance group includes a team for covenant compliance and trigger-event administration. A vendor supports covenant testing and springing lockbox setups as well. Midland continues to expand its use of an enhanced covenant compliance module to support this work. Midland receives a nightly data feed from its CMBS research vendor to produce system-generated alerts and daily reports for tracking watchlist loans, compliance breaches, and resolving actionable trigger

events. The Company noted that because it performs acquisition due diligence on many of its CMBS servicing portfolios in which Midland is named as special servicer, it can refer to the original underwriting data as well.

Midland follows CREFC portfolio-review guidelines to issue watchlist reports based on inspection data, financial-statement spreads, and other information. Midland maintains its own risk-rating system for balance-sheet loans, GSE loans with loss-sharing components, and for clients on a subset of its CMBS pools on a contractual basis. Midland has other watchlists for non-CMBS loans with criteria, including any investor-established requirements.

Exhibit 11 Midland: CMBS Loans on CREFC Watchlists (% by Loan Count)

	June 30, 2023	December 31, 2022	December 31, 2021	December 31, 2020
Within Primary or Primary/Master Combined Portfolio	26.4	27.3	28.6	31.4
Within Master Servicer Only	21.0	20.2	27.9	38.8
For Entire CMBS Servicing Portfolio	25.3	25.9	28.4	32.7

In H1 2023, Midland, as a primary servicer (or primary/master combined servicer), reported that 399 loans, or nearly the same number of 420 loans for all of 2022, had their springing-lockbox provisions triggered. Midland had 570 loans with springing-lockbox provisions triggered in 2021.

For past due payments, the Company sends automated notices to borrowers generally within one day after the grace period ends, and then at 30 days after the actual due date, based on daily delinquency reports. Midland will contact borrowers by phone within two days of a missed due date and conduct follow-up calls. The company maintains a centralized chronology of collection efforts and borrower comments on its servicing system.

Single-Family Rental Transaction Management

Midland has a team dedicated for SFR securitization portfolio management and surveillance. As a business decision made a few years ago, the Company has been focused on acquiring single-borrower transactions, which comprised about 61% by loan count of the SFR securitized portfolio at midyear 2023. For all its rated securitizations, Midland serves as both master and primary servicer, and is the special servicer for many as well.

Using customized templates, the Midland SFR team reviews monthly property-manager reports to track occupancy and rental activity, cash flow performance, budget variances, and capital expenditure requests at the loan and deal level. The SFR team also assists with reporting to rating agencies and addressing transaction-based questions through established communication protocols.

Assessment: Midland has sound and proactive practices for financial statement collections and analysis, property inspections, trigger-event and loan covenant monitoring, and watchlist management. DBRS Morningstar views Midland's having a dedicated analyst for every CMBS borrower relationship as an

industry best practice. Besides CMBS assets, Midland also demonstrates solid capabilities for SFR surveillance and portfolio management. The Company's expanded vendor support, enhanced borrower portal, and rollout of a new covenant/trigger-event tracking module as well as other technology enhancements have strengthened its surveillance and overall portfolio management capabilities. As a master servicer, Midland has proactive surveillance practices for its subserviced loans.

Portfolio Management: Borrower Consent Requests

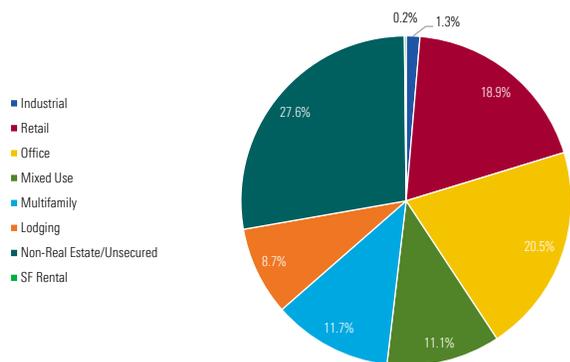
The real estate solutions department has a dedicated team to underwrite borrower consent requests such as defeasances, loan assumptions, lease approvals, and partial property releases. Although it strives for cross training, Midland has some team specialists for CMBS and Freddie Mac loan consents, which are a large portion of all activity. Depending on a transaction's structure and servicer roles, Midland may or may not serve as the lead manager and underwriter on a request. To facilitate interaction with external special servicers, Midland has a liaison unit and a tracking tool for external special servicer requests.

Asset managers submit cases, using templates for common request types, to obtain approval based on established delegations of authority. Consents involving larger loans or especially complex credit issues may include working group-style approval and input from Midland's legal staff. Midland manages approvals through the servicing system, which provides assignment-status and exception reports. To manage volume spikes, Midland noted that it can use a vendor and/or temporarily redeploy other trained staff to assist in underwriting some requests.

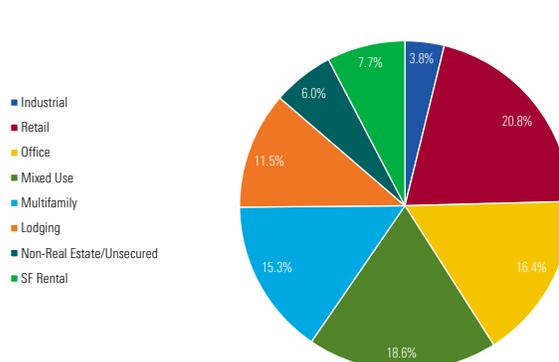
Assessment: Midland has sound practices and effectively leverages its technology for analyzing and approving a high volume of borrower consents in its respective roles as a primary and master as well as special servicer. DBRS Morningstar recognizes Midland's stated efforts to control consent-processing time frames and ongoing focus on borrowers' satisfaction.

Special Servicing Administration

Exhibit 12 Special Servicing: Active Volume by Property Type (UPB)*



Special Servicing: Active Volume by Property Type (Asset Count)*



*Loans and REO as of June 30, 2023. Not consolidated by related note positions. The active portfolio contained assets in 30 U.S. states, with concentrations in California, Florida, New Jersey, New York, and Texas. Approximately 95% by loan count were contained in securitized transactions. Percentages may not equal 100% because they are rounded. By comparison, by asset count as of June 30, 2022: Lodging – 29.8%, Office – 15.2% and Retail – 27.2%.

Asset Review Process

A special servicing liaison team oversees incoming/outgoing loan transfers with external servicers and special servicers. As noted, Midland does not have separate loan recovery and REO departments.

Upon the transfer of loans to special servicing, asset managers require borrowers to sign pre-negotiation letters before commencing workout discussions. Asset managers prepare loan resolution plans generally within 45 days of a loan transfer and prepare REO resolution plans within 45 days of taking title. Asset managers submit an updated asset status report, or asset business plan, which includes a net present value analysis of alternative resolution strategies, to obtain approval for specific terms of negotiated resolutions.

For most loans, the Company's delegations of authority require a working group process, which is de facto a committee-style approach that includes input from servicing management, in-house legal, and contract administration, for the approval of initial and updated asset resolution plans. Asset managers prepare their asset resolution cases directly in the asset management application, which provides for electronic approvals and tracks the status of approved and pending resolution cases. For CMBS assets, Midland monitors master servicers' outstanding advances against expected recoveries and stated that it will consult with them on advancing decisions.

Assessment: Midland has controlled and proactive asset recovery practices. The asset management system also adds efficiency to the Company's data-management, asset-analysis, and reporting capabilities. Midland's longstanding decision to usually retain the same asset manager when a loan becomes an REO property is reasonable given the Company's historically moderate volume of REO properties and its success with this approach to date.

REO Property Management

Midland generally uses single custodial operating accounts rather than separate rent collection and expense-funding accounts for property managers. The collateral management services group reviews monthly property manager reports for accuracy/variances, reconciles bank account activity, and assists asset managers and property managers with resolving issues. The RCQ department also reviews Midland's REO properties and oversight practices annually to identify any issues and recommend any related process improvements.

Through Midland's investor web portal, investors can view property management reports and other REO performance information. Midland engages property managers using its own form of agreement and provides them with a standard reporting procedure manual. Citing low REO volume (only five REO properties as of June 30, 2023) and its assessed risk profiles of its managed properties, Midland has not completed any property manager audits in the past few years. However, accounting staff conduct monthly property manager reporting reviews.

Property sales require asset managers to prepare an REO disposition case that presents the marketing process and results, the sale terms, and a collateral value and recovery analysis. Like loan resolutions, REO sales cases require approval through delegations of authority and a working group process for most assets. Midland uses a standardized purchase and sale agreement as well.

Assessment: Midland's REO management function is soundly controlled as demonstrated by the company's monthly reporting standards for property managers, asset managers' oversight requirements, and respective leveraging of the RCQ and collateral management services groups for REO property compliance reviews and bank account reconciliations.

Vendor and Legal Oversight

Midland uses PNC Bank's Enterprise Third-Party Management Program (ETPM) portal to engage and monitor vendors (such as for appraisals, environmental/engineering assessments, legal counsel, property managers, tax valuation firms, UCC services, and brokers). ETPM includes a sourcing group, which Midland managers must use to engage a new vendor. Sourcing assists with the selection process and evaluating vendors' qualifications and with negotiating the contract terms. ETPM requires an in-depth risk assessment of each service provider, which is also required to provide its policies and procedures, complete technology/security questionnaires, and any audits.

In parallel with ETPM, Midland owns the ongoing monitoring and oversight of the contract relationship. Midland noted that its monitoring procedures are designed so that suppliers/vendors are adhering to the terms, standards, and any regulatory requirements of their agreements. Midland also has a six-person legal department, including one paralegal, to coordinate law firm engagements and support asset managers with their workout strategies and analyses. For certain types of engagements, such as property management and legal services, Midland has its own form agreements to drive consistency. The asset management system also tracks vendor work orders.

Assessment: Midland's vendor oversight practices are well controlled and mostly centralized. The Company's leveraging of in-house legal resources to support asset management also mitigates risk.

Managing Conflicts of Interest

Midland serves exclusively as a third-party special servicer and does not retain any investment interests, directly or indirectly, in the securitizations for which it is the named special servicer. The Company reported that it may selectively engage in fee-sharing to obtain or retain assignments.

Midland does not have or use affiliated brokers, nor does it use affiliates or related parties for property management or for resolutions other than note sales. Its stated practices are not to collect special servicing fees from the trust that it also collects from borrowers or other sources, and not to collect amounts that exceed the trust contractual fee as outlined in the related servicing agreement.

Assessment: As part of a regulated bank, Midland has sound conflicts-of-interest management. Its role as a third-party special servicer in all transactions also minimizes the likelihood of potential conflicts.

Asset Resolution and Recovery Performance

Volume and Disposition Methods

In H1 2023, Midland resolved 31 specially serviced loans with a total UPB of approximately \$593 million through various methods, although about 25% of these resolutions were modifications or other corrective actions enabling the loans to return to the master/primary servicer. It did not sell any REO assets in this time period. All resolved assets were in securitized transactions.

In 2022, Midland resolved 153 specially serviced loans with a total UPB of approximately \$3.0 billion through various methods, although about 55% of these resolutions were modifications or other corrective actions enabling the loans to return to the master/primary servicer. It also sold three REO assets. Except for two loans, all resolved assets were in securitized transactions.

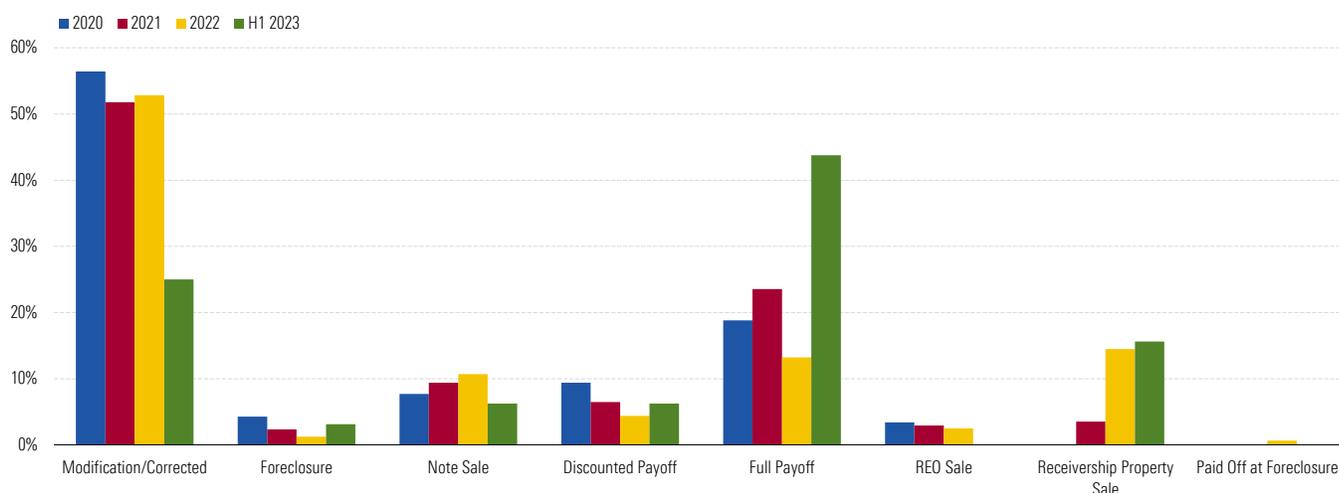
In 2021, Midland resolved 161 specially serviced loans with a total UPB exceeding \$4.3 billion through various methods, although it handled more than 50% of these resolutions through modifications or other corrective actions, including some pandemic-related relief measures, enabling the loans to return to the master/primary servicer. It also sold four REO assets. Except for two loans and part of one REO sale, all resolved assets were in securitized transactions.

SFR Resolutions

Midland's special servicing activity has continued to include SFR loans. For the period January 2019 through June 2023, Midland liquidated or otherwise resolved 81 SFR loans through various methods, and released some properties from their mortgages, with overall strong recovery results.

Exhibit 13 Midland: Single-Family Rental Loan Resolution Volume (By Count)

Resolution Method	H1 2023	2022	2021	2020	2019
Modified/Corrected	0	1	6	8	3
Full Payoff	4	4	11	15	4
Discounted Payoff	0	2	1	3	4
Note Sale	0	3	7	3	0
Receivership Sale	1	1	0	0	0
Total	5	11	25	29	11

Exhibit 14 Midland Special Servicing Resolution Methods by Asset Count (2020 – June 2023)*

*Completed foreclosures are included although they are not final resolutions.

Unresolved Asset Aging, Resolution Times, and Recovery Proceeds

As of June 30, 2023, the average age of all unresolved specially serviced CMBS assets, based on the time Midland managed the asset, was approximately 27 months, up from 25 months as of June 30, 2022. The percentage of assets held more than three years and the average age of unsold REO assets increased as well. Some other special servicers also have had increases in asset aging.

Exhibit 15 Midland – Age of Unresolved CMBS Assets*

	June 2023	June 2022	June 2021
Assets Held One Year or Less (%)	34.4	12.1	45.8
Assets Held Up 18 months or Less (%)	40.6	25.0	81.0
Assets Held Two Years or Less (%)	43.8	45.2	87.3
Assets Held Over Three Years (%)	33.6	13.7	5.6
All Assets (loans and REO) - Average Months	27	25	14
REO Assets Held as REO at Midland – Average Months	43	23	17

*Rounded to nearest whole month. All securitized including Freddie Mac but excludes loans classified as performing.

Exhibit 16 Midland – Asset Resolution Times (Months)*

	H1 2023	H2 2022	H1 2022	H2 2021	H1 2021
Modified/Corrected Loans**	27	25	20	13	11
Individual Note Sales	5	25	25	25	7
Discounted Payoffs	10	37	19	18	26
Full Payoffs	11	35	18	14	12
Completed Foreclosures	35	21	7	23	28
Receivership Property Sale	37	29	26	24	N.A.
REO Sales (Time Held as REO)	N.A.	12	33	13	8

*Rounded to nearest whole month. May include some non-CMBS assets. Based on time period Midland managed the asset. REO sales times are based on the period Midland held the asset as an REO. **Excludes forbearances. N.A. – no activity.

Over the past few years, in addition to obtaining full payoffs, the Company has liquidated loans through note sales and DPOs with the net recovery often exceeding the UPB. The Company also has been liquidating more loans with equal success through receivership property sales. Midland has had only a few property sales in the past few years because of relatively moderate REO volume. However, its aggregate net recoveries relative to estimated market values have remained high year over year.

Exhibit 17 Aggregate Asset Recovery Net Proceeds Versus Collateral Values and Unpaid Principal Balances

	H1 2023	H2 2022	H1 2022	H2 2021	H1 2021	2020
Net Recovery Proceeds-to-Value (%)						
Individual Note Sales*	65.1	33.9	84.1	91.3	62.2	58.7
Discounted Payoffs*	143.7	94.9	83.1	102.7	104.8	89.1
Receivership Property Sale	112.1	102.5	99.1	107.3	N.A.	N.A.
REO Dispositions**	N.A.	128.1	125.5	170.5	89.0	98.1
Net Proceeds-to-UPB (%)						
Individual Note Sales	102.7	107.0	89.3	90.4	70.0	88.5
Discounted Payoffs	92.9	87.3	99.9	69.8	67.1	77.9
Receivership Property Sale	78.0	92.9	86.3	82.7	N.A.	N.A.

*For some note sales and DPOs, the net proceeds exceeded the UPB and in some other cases, the net recoveries were either close to or greater than 100% of value. DPOs included one SFR loan in 2020, one in 2021, and two in 2022. Note sales included seven SFR loans in 2021 and three in 2022. Receivership sales included one SFR in 2022 and one in H1 2023. **Includes some SFR properties released from their mortgage notes. N.A. – no activity.

Exhibit 18 Midland Special Servicing Loan Activity (January 2020 to June 2023)

	H1 2023		2022		2021		2020	
	Volume (\$ Millions)	Loans	Volume (\$ Millions)	Loans	Volume (\$ Millions)	Loans	Volume (\$ Millions)	Loans
Loan Portfolio at Beginning of Period	5,447.9	173	6,510.8	282	9,217.6	395	1,904.0	124
Loans Transferred Into Portfolio:								
Retransferred/Redefaulted Loans	67.8	4	14.4	3	275.4	12	33.8	6
Pre-Existing from Another Special Servicer	0.0	0	0.0	0	0.0	0	204.0	6
New Nonmonetary/Imminent Default Transfers	515.0	12	528.3	23	612.3	35	8,265.9	291
New Monetary Default Transfers	1,777.0	47	2,078.4	47	507.3	40	1,203.3	92
Total Transfers	2,359.9	63	2,621.1	73	1,395.0	87	9,707.0	395
Loans Fully Resolved:								
Modified or Corrected Loans	(139.3)	(8)	(2,303.5)	(84)	(2,095.9)	(88)	(1,637.7)	(66)
Individual Note Sales	(11.9)	(2)	(168.5)	(17)	(120.6)	(16)	(191.4)	(9)
Discounted Payoffs (Excludes Note Sales)	(48.4)	(2)	(87.4)	(7)	(122.4)	(11)	(116.4)	(11)
Full Payoffs	(351.5)	(14)	(170.6)	(22)	(704.6)	(40)	(102.6)	(22)
Receivership Property Sale	(42.2)	(5)	(305.9)	(23)	(58.5)	(6)	0.0	0
Total Loan Resolutions	(593.3)	(31)	(3,035.9)	(153)	(3,102.0)	(161)	(2,048.1)	(108)
Securitized Loan Resolutions	(593.3)	(31)	(3,034.2)	(151)	(3,086.0)	(159)	1,900.4	104
Other Cash Recoveries	(0.8)	0	(165.6)	(2)	(2.2)	(2)	(201.6)	(4)
Completed Foreclosures	(4.2)	(1)	(38.1)	(2)	(55.9)	(4)	(101.3)	(5)
Adjustments/Charged-Offs/Loans Transferred Out	(402.8)	(26)	(444.4)	(25)	(941.7)	(33)	(42.4)	(7)
Loan Portfolio at End of Period	6,806.7	178	5,447.9	173	6,510.8	282	9,217.6	395
Securitized Loans at End of Period	6,577.8	168	5,219.1	163	6,498.3	278	9,183.1	388
Property Count (Total Portfolio) at End of Period		293		344		533		757

Exhibit 19 Midland REO Portfolio Activity (January 2020 to June 2023)

	H1 2023		2022		2021		2020	
	Volume (\$ Millions)	Properties						
REO Portfolio at Beginning of Period	134.3	6	164.0	8	236.6	10	158.9*	8*
Completed Foreclosures	4.2	1	38.1	2	55.9	6	101.3	5
REO Sold During Period	0.0	0	(37.6)	(4)*	(34.0)	(5)*	(9.1)	(4)*
Other REO Transferred Out	(23.6)	(2)	0.0	0	0.0	0	(5.1)	(1)
Other Adjustments	(0.2)	0	(30.2)	0	(94.5)	(3)	(9.4)	2
REO Portfolio at End of Period	114.7	5	134.3	6	164.0	8	236.6	10
Securitized Properties at End of Period	114.7	5	134.3	6	163.0	7	184.2**	10**

*Three REO sales in 2020, four in 2021, and three in 2022 based on underlying loans tied to the same property. **Reflects one asset with CMBS and non-CMBS ownership components.

Assessment: Midland extended its successful asset resolution record in 2022 and the first half of 2023, with most activity involving CMBS transactions. Also noteworthy is that Midland has been increasingly successful in obtaining rent receivers and liquidating the corresponding with high recoveries through receivership-led property sales.

Investor and Master Servicer Reporting

Midland's special servicing procedures cover its reporting requirements for property-protection advances, realized losses, ASERs, and communications with master servicers on asset management decisions. As a CMBS special servicer, Midland provides initial and updated asset status reports to the trustee as required. It also provides final asset resolution plans containing the specific terms and details

of a workout or liquidation to the trustee. Year over year, Midland's CMBS reporting accuracy as a special servicer has been high. It incurred only two minor reporting errors in 2022 and none in H1 2023.

Assessment: Midland is well experienced with special servicer-related reporting and has sound capabilities to meet CMBS and other investor requirements. DBRS Morningstar also acknowledges the Company's high degree of CMBS reporting accuracy over the past two years.

Ranking Scale

- MOR CS1: Superior Quality—Exceeds prudent loan servicing standards. Unlikely to be significantly vulnerable to future credit events.
- MOR CS2: Good Quality—Demonstrates proficiency in loan servicing standards. May be vulnerable to future credit events, but qualifying negative factors are considered manageable.
- MOR CS3: Adequate Quality—Demonstrates satisfactory loan servicing standards. May be vulnerable to future credit events.
- MOR CS4: Weak Quality—Demonstrates lack of compliance with one or more key areas of risk. Vulnerable to future credit events.

A servicer assigned a ranking of at least MOR CS3 is deemed to comply with what DBRS Morningstar views as the minimum prudent loan servicing standards and requirements for the servicer's operational category and role.

Disclaimer

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All figures are in U.S. dollars unless otherwise noted.

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